

***FlyBy Math™* Alignment**  
**Mathematics Content Standards, Benchmarks and Performance Standards**  
**June 2002**

**Strand: NUMBER AND OPERATIONS****Standard:** Students will understand numerical concepts and mathematical operations.**5-8 Benchmark: Compute fluently and make reasonable estimates.****Performance Standards: Grade 6**

2. Use estimates to check reasonableness of results and make predictions in situations involving rational numbers.

***FlyBy Math™* Activities**

--Predict outcomes and explain results of mathematical models and experiments.

**Strand: ALGEBRA****Standard:** Students will understand algebraic concepts and applications.**5-8 Benchmark: Understand patterns, relations, and functions.****Performance Standards: Grade 6**

1. Solve problems involving proportional relationships.

2. Graph ordered pairs in the coordinate plane.

5. Make generalizations based on observed patterns and relationships.

***FlyBy Math™* Activities**

--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.

--Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation.

--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

**5-8 Benchmark: Represent and analyze mathematical situations and structures using algebraic symbols.****Performance Standards: Grade 6**

1. Solve problems involving proportional relationships.

4. Demonstrate that a variable can represent a single quantity that changes.

***FlyBy Math™* Activities**

--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

--Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.

--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

5. Demonstrate how changes in one variable affect other variables.	<p>--Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.</p> <p>--Interpret the slope of a line in the context of a distance-rate-time problem.</p>
<b>5-8 Benchmark: Use mathematical models to represent and understand quantitative relationships.</b>	
<b>Performance Standards: Grade 6</b>	<b><i>FlyBy Math™</i> Activities</b>
1. Develop and use mathematical models to represent and justify mathematical relationships found in a variety of situations.	<p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p> <p>--Predict outcomes and explain results of mathematical models and experiments.</p>
2. Create, explain, and use mathematical models such as: <ul style="list-style-type: none"> <li>• Venn diagrams to show the relationships between the characteristics of two or more sets</li> <li>• equations and inequalities to model numerical relationships</li> <li>• three-dimensional geometric models</li> <li>• graphs, tables, and charts to interpret and analyze data</li> </ul>	<p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p> <p>--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p> <p>--Predict outcomes and explain results of mathematical models and experiments.</p>
<b>5-8 Benchmark: Analyze changes in various contexts.</b>	
<b>Performance Standards: Grade 6</b>	<b><i>FlyBy Math™</i> Activities</b>
2. Solve problems that involve change using proportional relationships.	<p>--Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.</p> <p>--Interpret the slope of a line in the context of a distance-rate-time problem.</p>
3. Use ratios to predict changes in proportional situations.	<p>--Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.</p> <p>--Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation.</p>
4. Use tables and symbols to represent and describe proportional and other relationships involving conversions, sequences, and perimeter.	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

**Strand: GEOMETRY****Standard:** Students will understand geometric concepts and applications.**5-8 Benchmark: Specify locations and describe spatial relationships using coordinate geometry and other representational systems.****Performance Standards: Grade 6**

1. Use coordinate geometry to describe location on a plane.

***FlyBy Math™* Activities**

--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.

**Strand: MEASUREMENT****Standard:** Students will understand measurement systems and applications.**5-8 Benchmark: Apply appropriate techniques, tools, and formulas to determine measurements.****Performance Standards: Grade 6**

1. Apply various measurement techniques and tools, units of measure, and degrees of accuracy to find accurate rational number representations for length, liquid, weight, perimeter, temperature, and time.

***FlyBy Math™* Activities**

--Conduct simulation and measurement for several aircraft conflict problems.

--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.

**Strand: DATA ANALYSIS AND PROBABILITY****Standard:** Students will understand how to formulate questions, analyze data, and determine probabilities.**5-8 Benchmark: Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.****Performance Standards: Grade 6**

2. Draw and compare different graphical representations of the same data.

***FlyBy Math™* Activities**

--Represent distance, rate, and time data using tables, line plots, bar graphs, and line graphs.

--Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

5. Solve problems by collecting, organizing, displaying and interpreting data.

--Conduct simulation and measurement for several aircraft conflict problems.

--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

--Use tables, graphs, and equations to solve aircraft conflict problems.

11. Formulate and solve problems by collecting, organizing, displaying, and interpreting data.	<p>--Conduct simulation and measurement for several aircraft conflict problems.</p> <p>--Represent distance, rate, and time data using tables, line plots, bar graphs, and line graphs.</p> <p>--Use formulas and graphs to solve and analyze aircraft conflict problems and to communicate results.</p>
<b>5-8 Benchmark: Select and use appropriate statistical methods to analyze data.</b>	
<b>Performance Standards: Grade 6</b>  1. Choose an appropriate graphical format to organize and represent data.	<b><i>FlyBy Math™</i> Activities</b>  --Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.
<b>5-8 Benchmark: Develop and evaluate inferences and predictions that are based on data.</b>	
<b>Performance Standards: Grade 6</b>  2. Conduct observations, surveys, experiments and/or simulations, record the results in charts, tables, or graphs, and use the results to draw conclusions and make predictions	<b><i>FlyBy Math™</i> Activities</b>  --Conduct simulation and measurement for several aircraft conflict problems.  --Use calculations and experimental evidence to predict, describe, and explain several aircraft conflict problems.  --Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.
4. Compare expected results with actual results in a simple experiment.	--Compare predictions, calculations, and experimental evidence for several aircraft conflict problems.